

Metal Industry Indicators

Indicators of Domestic Primary Metals, Steel, Aluminum, and Copper Activity

June 2003

The primary metals leading index increased strongly in May, but it is too soon to tell if that is an indication of renewed strength in industry activity. In April, the leading index of metal prices posted its seventh decline in the past 9 months, suggesting weak near-term growth in overall metal prices.

The **primary metals leading index** surged 2.2% in May, climbing to 131.4 from a revised 128.6 in April, and the index's 6-month smoothed growth rate increased to 1.7% from a revised -2.5% in April. The 6-month smoothed growth rate is a compound annual rate that measures the near-term trend. Normally, a growth rate above +1.0% signals an upward trend for future growth in metals activity, while a growth rate below -1.0% indicates a downward trend.

Only four of the leading index's eight components were available in time to compute the May index value. The Institute for Supply Management's PMI, an index of manufacturing activity, posted its first increase since last December and made the largest contribution to the increase in the leading index. The stock price component and the length of the average workweek in primary metals establishments also posted solid gains. The remaining available component, the JOC-ECRI metals price index growth rate, was unchanged from April.

The average workweek for primary metals was among several components of the metal industry leading and coincident indexes from the Bureau of Labor Statistics (BLS) Current Employment Statistics survey, which were revised in June. In addition to the customary annual benchmark revision, BLS converted from industry coding based on the 1987 Standard Industrial Classification (SIC) system to industry coding based on the 2002 version of the North American Industry Classification System (NAICS).

The strong showing of the May leading index holds out some promise that the recent weakness in the index may be short-lived, but it is too soon to tell if the index is beginning to signal an upturn in primary metals activity.

The **steel leading index** increased 0.7% in April, the latest month for which it is available, moving up to 109.0 from a revised 108.2 in March. The index's 6-month smoothed growth rate advanced to -3.7% in April from a revised -5.3% in March. The strength in the index was spread among five of its nine components. Despite its April increase, the growth rate of the steel leading

index continues to suggest a near-term decline in growth in U.S. steel industry activity.

The **aluminum mill products leading index** followed its huge drop in March with a 0.7% increase in April. The index's 6-month smoothed growth rate climbed to -2.2% from a revised -3.8% in March. The largest positive contribution to the net increase in the leading index came from commercial and industrial construction contracts, although that indicator recovered less than half of its March decrease. In all, five of the leading index's seven components moved higher in April. The growth rate of the aluminum mill products leading index continues to point to weaker growth in domestic aluminum mill products industry activity in the coming months.

The **primary aluminum leading index** edged down 0.1% in April to 78.9 from a revised 79.0 in March, and the index's 6-month smoothed growth rate slowed to 4.2% from a revised 4.6%. The length of the average workweek in primary aluminum establishments was not available for April. Of the five index components that were available for April, three decreased and two moved higher. The cash closing price for primary aluminum on the London Metal Exchange made the largest negative contribution to the net decrease in the leading index, while the S&P stock price index for aluminum companies was the largest positive factor. After the latest revisions, the growth rate of the primary aluminum leading index is not as strong as previously published, but it still points to an increase in U.S. primary aluminum industry activity over the next few months.

The **copper leading index** increased to 115.2 in April from a revised 114.4 in March, a gain of 0.7%. The index's 6-month smoothed growth rate rose to -3.6% from a revised -5.5% in March. The S&P stock price index for building products companies, which increased to a 9-month high, was responsible for most of the gain in the leading index. However, the growth rate of the copper leading index has been below -1.0% for the past 8 months, pointing to a downward trend in growth for the U.S. copper industry in the near term.

Metals Price Leading Index Posts Seventh Decline in 9 Months

The **metals price leading index** decreased 0.3% in April, the latest month for which it is available, dipping to 109.0 from a revised 109.3 in March. The index's 6-month smoothed growth rate slowed to -4.4% from a revised -4.1% in March.

Only three of the leading index's four components were available in time to compute the April index value. The growth rate of the index measuring the trade-weighted average exchange value of other major currencies against the U.S. dollar was the largest negative factor in the leading index's decline. The growth rate of the inflation-adjusted value of new orders for U.S. nonferrous metal products also moved lower. However, the yield spread between the U.S. 10-year Treasury Note and the federal funds rate posted its largest increase in 5 months.

The fourth component, the growth rate of the Economic Cycle Research Institute's (ECRI) 18-Country Long Leading Index, was

available only through March, when it dipped into negative territory for the first time since September 2001. The ECRI index signals economic activity for major industrialized countries about 5 months in advance.

The growth rate of the inflation-adjusted value of inventories of U.S. nonferrous metal products, which typically moves inversely with metal prices, increased in April to -11.2% from a revised -14.1% in March, the highest growth rate for this indicator in 16 months. The actual level of these inventories increased for only the second time in the past 8 months.

The growth rate of the metals price leading index still points to weak growth in overall metal prices in the near future. However, the weak U.S. dollar may tend to boost metals prices. The business cycle, foreign exchange rates, and inventories are only three factors in metals price determination. Other factors that affect prices include changes in metals production, speculation, strategic stockpiling, geopolitical instability, and production costs.

Table 1.
Leading Index of Metal Prices and Growth Rates of the Nonferrous Metals Price Index, Inventories of Nonferrous Metal Products, and Selected Metal Prices

	Leading Index of Metal Prices (1967=100)	Six-Month Smoothed Growth Rates				
		MII Nonferrous Metals Price Index	U.S. Nonferrous Metal Products Inventories (1982\$)	Primary Aluminum	Primary Copper	Steel Scrap
2002						
April	112.2r	-0.9	-15.3	-2.9	7.7	46.4
May	114.0r	0.9	-16.1	-1.8	13.8	68.0
June	113.4	3.3	-16.9	-0.9	18.3	59.8
July	114.1r	-6.9	-15.7	-7.7	-2.5	52.9
August	112.2r	-8.0	-13.5	-8.9	-4.8	46.8
September	112.1r	-11.0	-15.9	-10.1	-11.7	46.2
October	110.5r	-0.5	-15.5	-0.8	2.3	38.2
November	111.1r	1.3	-17.2	0.0	5.7	17.4
December	110.3r	-1.6	-16.6r	-0.4	-1.8	11.2
2003						
January	111.1r	12.7	-14.0	10.8	20.2	27.8
February	109.8r	12.4	-13.5	12.4	14.9	39.5
March	109.3r	-1.1	-14.1r	-1.0	-0.3	40.0
April	109.0	0.7	-11.2	0.1	2.3	30.1
May	NA	11.5	NA	11.6	13.4	2.3

NA: Not available r: Revised

Note: The components of the Leading Index of Metal Prices are the spread between the U.S. 10-year Treasury Note and the federal funds rate, and the 6-month smoothed growth rates of the deflated value of new orders for nonferrous metal products, the Economic Cycle Research Institute's 18-Country Long Leading Index, and the reciprocal of the trade-weighted average exchange value of the U.S. dollar against other major currencies. The Metal Industry Indicators (MII) Nonferrous Metals Price Index measures changes in end-of-the-month prices for primary aluminum, copper, lead, and zinc traded on the London Metal Exchange (LME). The steel scrap price used is the price of No. 1 heavy melting. Inventories consist of the deflated value of finished goods, work in progress, and raw materials for U.S.-produced nonferrous metal products (NAICS 3313, 3314, & 335929). Six-month smoothed growth rates are based on the ratio of the current month's index or price to its average over the preceding 12 months, expressed at a compound annual rate.

Sources: U.S. Geological Survey (USGS); American Metal Market (AMM); the London Metal Exchange (LME); U.S. Census Bureau; the Economic Cycle Research Institute, Inc. (ECRI); and Federal Reserve Board.

**CHART 1.
LEADING INDEX OF METAL PRICES AND GROWTH RATES
OF NONFERROUS METALS PRICE INDEX, INVENTORIES OF
NONFERROUS METAL PRODUCTS, AND SELECTED PRICES**

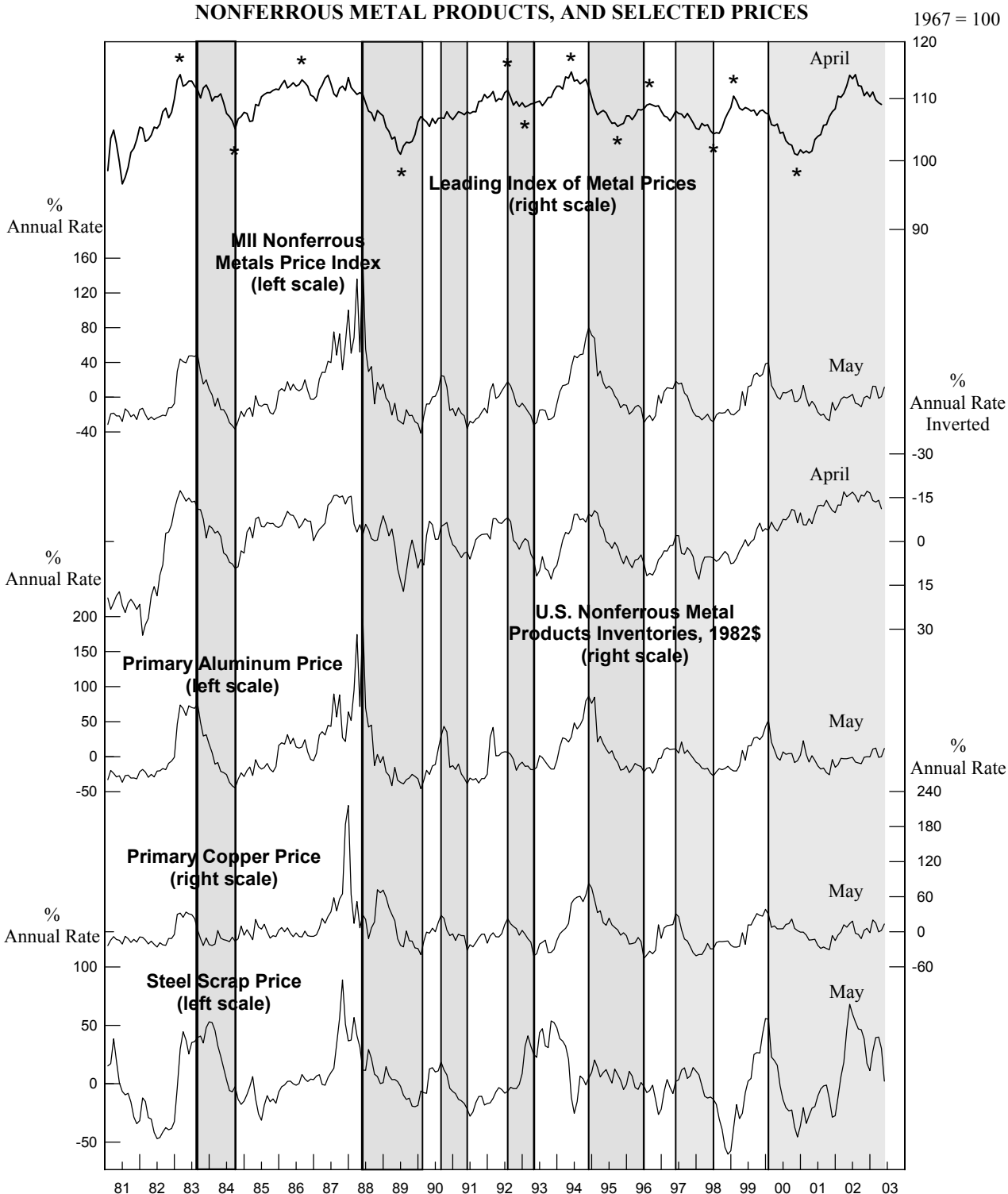


Table 2.
The Primary Metals Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2002				
June	132.0r	4.5r	99.1r	-1.6r
July	129.8r	0.9r	98.5r	-2.1r
August	129.9r	0.8r	99.3r	0.1r
September	128.9r	-0.9r	98.3r	-1.3r
October	129.7r	0.3r	99.0r	0.6r
November	129.8r	-0.1r	98.2r	-0.8r
December	131.1r	1.4r	97.9r	-1.2r
2003				
January	130.7r	0.4r	98.5r	-0.3r
February	130.9r	0.5r	98.3r	-0.5r
March	128.7r	-2.7r	97.7r	-1.7r
April	128.6r	-2.5r	96.5	-3.8
May	131.4	1.7	NA	NA

NA: Not available **r:** Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 3.
The Contribution of Each Primary Metals Index Component to the Percent Change in the Index from the Previous Month

Leading Index	April	May
1. Average weekly hours, primary metals (NAICS 331)	-0.5r	0.5
2. Weighted S&P stock price index, machinery, construction and farm and industrial (December 30, 1994 = 100)	0.5r	0.6
3. Ratio of price to unit labor cost (NAICS 331)	-0.2	NA
4. JOC-ECRI metals price index growth rate	-0.3r	0.0
5. New orders, primary metal products, (NAICS 331 & 335929) 1982\$	0.1	NA
6. Index of new private housing units authorized by permit	0.1	NA
7. Growth rate of U.S. M2 money supply, 1996\$	0.2	NA
8. PMI	-0.1r	1.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-0.2r	2.2
Coincident Index	March	April
1. Industrial production index, primary metals (NAICS 331)	-0.6r	-0.4
2. Total employee hours, primary metals (NAICS 331)	-0.1r	-0.6
3. Value of shipments, primary metals products, (NAICS 331 & 335929) 1982\$	0.0r	-0.4
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	-0.6r	-1.3

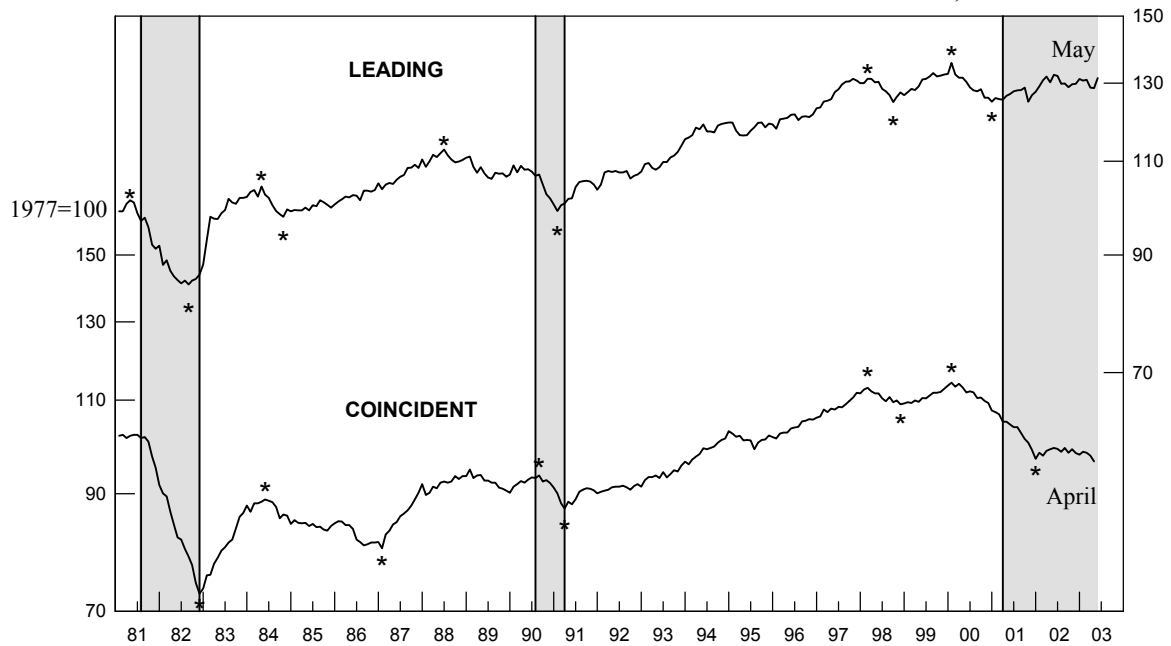
Sources: Leading: 1, Bureau of Labor Statistics; 2, Standard & Poor's and U.S. Geological Survey; 3, U.S. Geological Survey; 4, Journal of Commerce and Economic Cycle Research Institute, Inc.; 5, U.S. Census Bureau and U.S. Geological Survey; 6, U.S. Census Bureau and U.S. Geological Survey; 7, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 8, Institute for Supply Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; 3, U.S. Census Bureau and U.S. Geological Survey. All series are seasonally adjusted, except 2, 3, and 4 of the leading index.

NA: Not available **r:** Revised

Note: A component's contribution, shown in Tables 3, 5, 7, and 9, measures its effect, in percentage points, on the percent change in the index. Each month, the sum of the contributions plus the trend adjustment equals (except for rounding differences) the index's percent change from the previous month.

CHART 2.

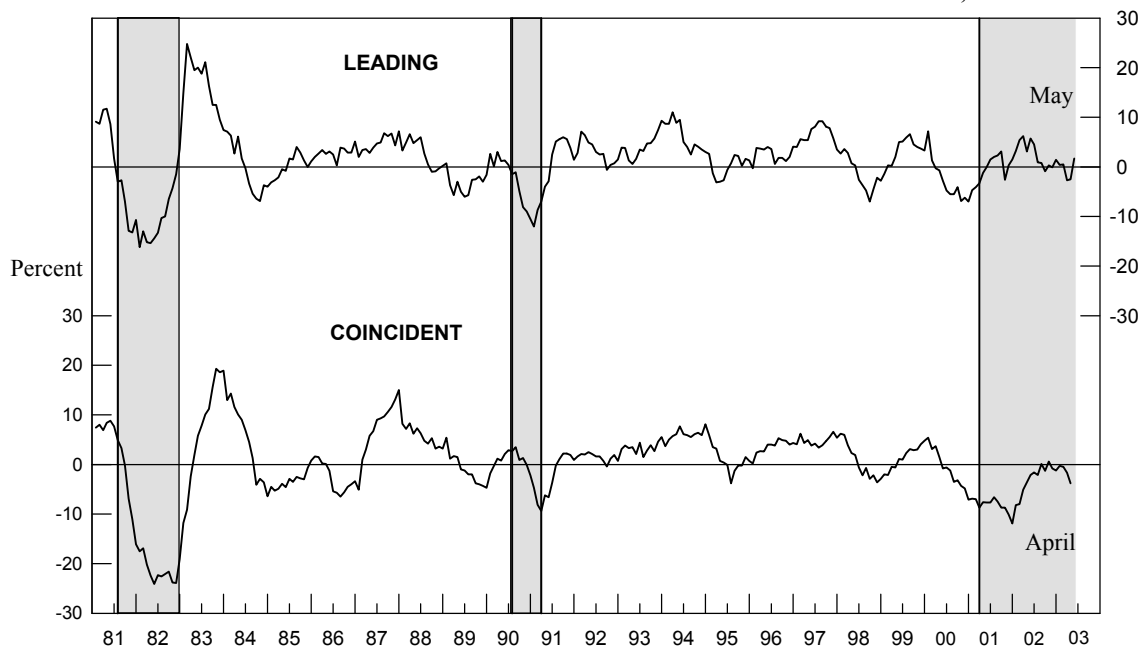
PRIMARY METALS: LEADING AND COINCIDENT INDEXES, 1981-2003 1977=100



Shaded areas are business cycle recessions. Asterisks (*) signify peaks (the end of an expansion) and troughs (the end of a downturn) in the economic activity reflected by the indexes.

CHART 3.

PRIMARY METALS: LEADING AND COINCIDENT GROWTH RATES, 1981-2003 Percent



Shaded areas are business cycle recessions.

The growth rates are expressed as compound annual rates based on the ratio of the current month's index to its average level during the preceding 12 months.

Table 4.
The Steel Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2002				
May	112.7r	3.7	94.2r	0.0r
June	112.8r	3.3r	94.1r	0.3r
July	112.5r	2.3r	93.8r	-0.1
August	111.7r	0.7r	94.6r	1.9r
September	110.9r	-0.9r	94.3r	1.5r
October	110.4r	-1.5r	94.7r	2.4r
November	111.0r	-0.7r	94.4r	1.7r
December	113.1r	2.6r	94.5r	1.6r
2003				
January	110.6r	-1.9r	94.5r	1.0r
February	109.6r	-3.5	94.0r	-0.1r
March	108.2r	-5.3r	93.7r	-1.0r
April	109.0	-3.7	93.0	-2.3

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 5.
The Contribution of Each Steel Index Component to the Percent Change in the Index from the Previous Month

Leading Index	March	April
1. Average weekly hours, iron and steel mills (NAICS 3311 & 3312)	0.3r	-0.2
2. New orders, iron and steel mills (NAICS 3311 & 3312), 1982\$	-0.4	0.2
3. Shipments of household appliances, 1982\$	0.3	0.0
4. S&P stock price index, steel companies	-0.3	0.2
5. Retail sales of U.S. passenger cars and light trucks (units)	0.2	0.2
6. Growth rate of the price of steel scrap (#1 heavy melting, \$/ton)	0.0	0.0
7. Index of new private housing units authorized by permit	-0.3	0.1
8. Growth rate of U.S. M2 money supply, 1996\$	-0.4	0.2
9. PMI	-0.6	-0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-1.2r	0.6
Coincident Index		
1. Industrial production index, iron and steel products (NAICS 3311 & 3312)	-0.5r	-0.3
2. Value of shipments, iron and steel mills (NAICS 3311 & 3312), 1982\$	0.0r	-0.2
3. Total employee hours, iron and steel mills (NAICS 3311 & 3312)	0.1r	-0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	-0.3r	-0.6

Sources: Leading: 1, Bureau of Labor Statistics; 2, U.S. Census Bureau and U.S. Geological Survey; 3, U.S. Census Bureau and U.S. Geological Survey; 4, Standard & Poor's; 5, U.S. Bureau of Economic Analysis and American Automobile Manufacturers Association; 6, Journal of Commerce and U.S. Geological Survey; 7, U.S. Census Bureau and U.S. Geological Survey; 8, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 9, Institute for Supply Management. Coincident: 1, Federal Reserve Board; 2, U.S. Census Bureau and U.S. Geological Survey; 3, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted, except 4 and 6 of the leading index.

r: Revised

CHART 4.
STEEL: LEADING AND COINCIDENT INDEXES, 1981-2003

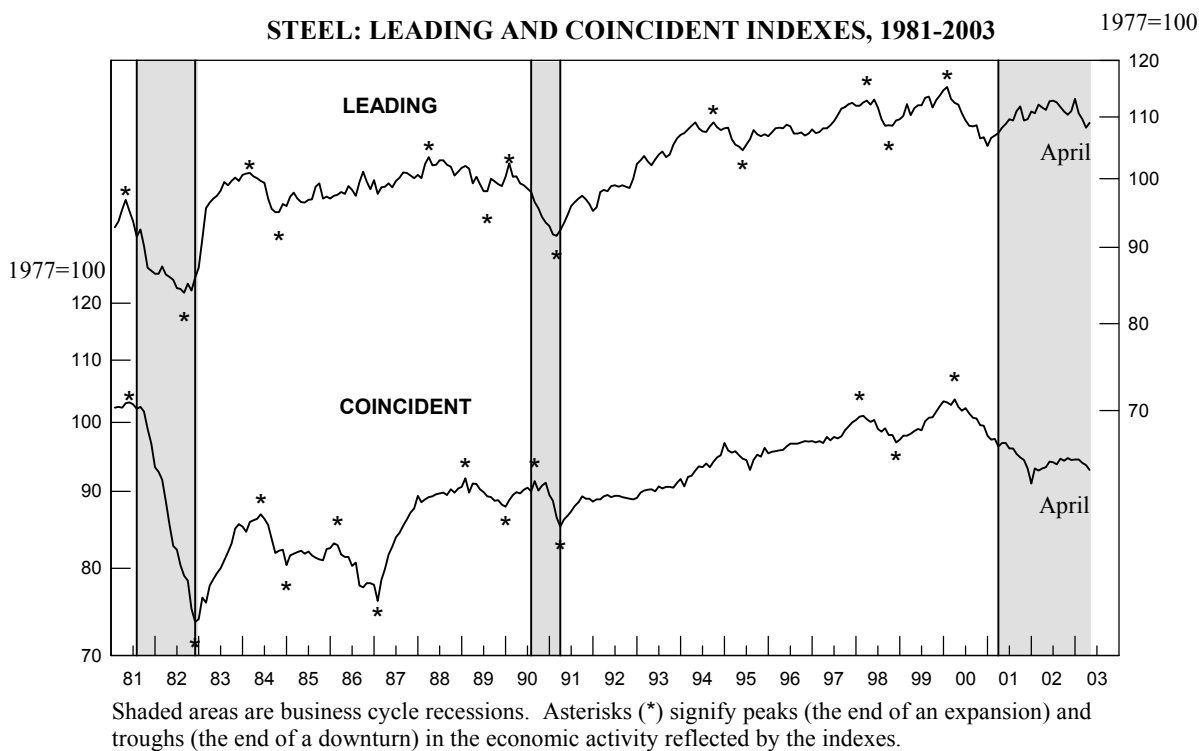


CHART 5.
STEEL: LEADING AND COINCIDENT GROWTH RATES, 1981-2003

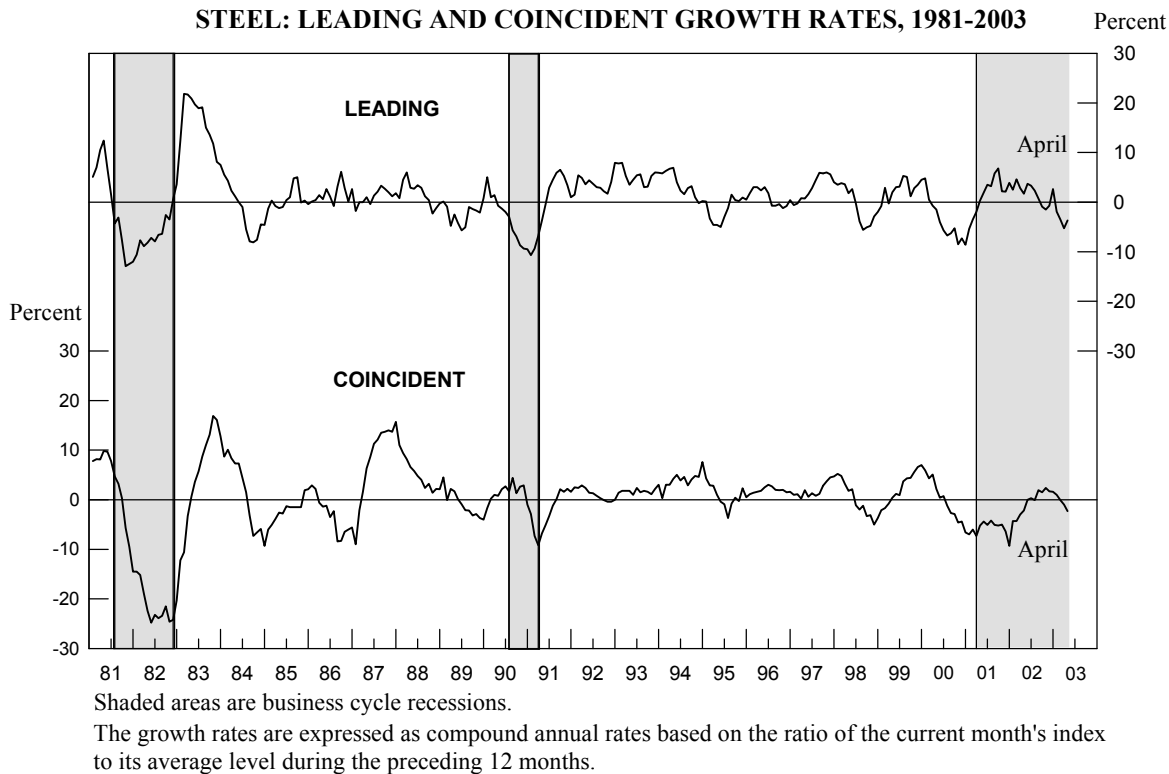


Table 6.
The Aluminum Mill Products Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2002				
May	165.0r	-0.1r	134.8r	-2.4r
June	165.6r	0.2r	136.6r	0.3r
July	165.1r	-0.5r	135.5r	-1.0r
August	164.8r	-0.8r	136.1r	0.3r
September	164.5r	-1.3r	137.7r	2.5r
October	164.5r	-0.9r	136.0r	0.2r
November	165.3r	0.3r	136.9r	1.7r
December	167.9r	3.3r	137.5r	2.5r
2003				
January	166.2r	1.1r	134.7r	-1.6r
February	166.1r	0.7r	136.8r	1.2r
March	162.0r	-3.8r	135.9r	-0.4r
April	163.1	-2.2	135.2	-1.3

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

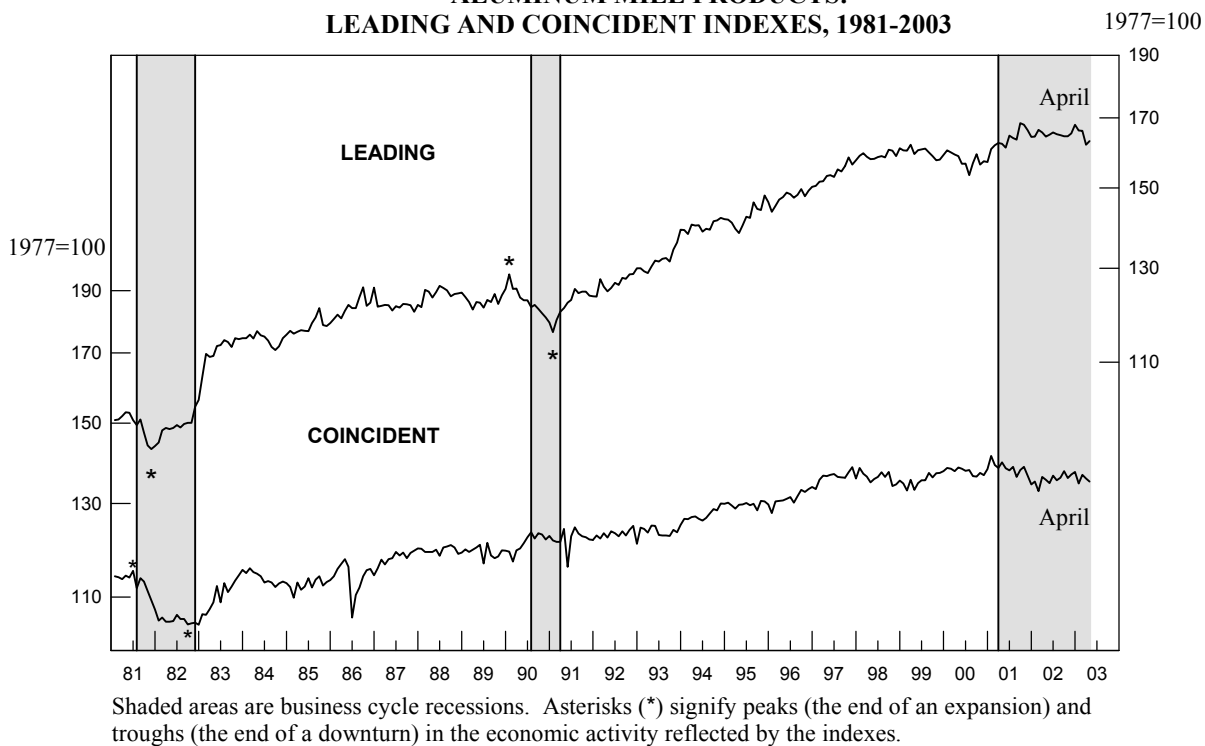
Table 7.
The Contribution of Each Aluminum Mill Products Index Component to the Percent Change in the Index from the Previous Month

Leading Index	March	April
1. Average weekly hours, aluminum sheet, plate, and foil (NAICS 331315)	-0.1r	-0.5
2. Index of new private housing units authorized by permit	-0.3r	0.1
3. Retail sales of U.S. passenger cars and light trucks (units)	0.2	0.2
4. Construction contracts, commercial and industrial (square feet)	-1.1	0.4
5. Net new orders for aluminum mill products (pounds)	-0.2	0.2
6. Growth rate of U.S. M2 money supply, 1996\$	-0.5	0.2
7. PMI	-0.7	-0.1
Trend adjustment	0.2	0.2
Percent change (except for rounding differences)	-2.5r	0.7
Coincident Index		
1. Industrial production index, misc. aluminum materials (NAICS 331315,9)	-0.7r	-0.1
2. Total employee hours, aluminum sheet, plate, and foil (NAICS 331315)	-0.1r	-0.6
Trend adjustment	0.2	0.2
Percent change (except for rounding differences)	-0.6r	-0.5

Sources: Leading: 1, Bureau of Labor Statistics; 2, U.S. Census Bureau and U.S. Geological Survey; 3, U.S. Bureau of Economic Analysis and American Automobile Manufacturers Association; 4, F.W. Dodge, Division of McGraw-Hill Information Systems Company; 5, The Aluminum Association, Inc. and U.S. Geological Survey; 6, Federal Reserve Board, Conference Board, and U.S. Geological Survey; 7, Institute for Supply Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted.

r: Revised

**CHART 6.
ALUMINUM MILL PRODUCTS:
LEADING AND COINCIDENT INDEXES, 1981-2003**



**CHART 7.
ALUMINUM MILL PRODUCTS:
LEADING AND COINCIDENT GROWTH RATES, 1981-2003**

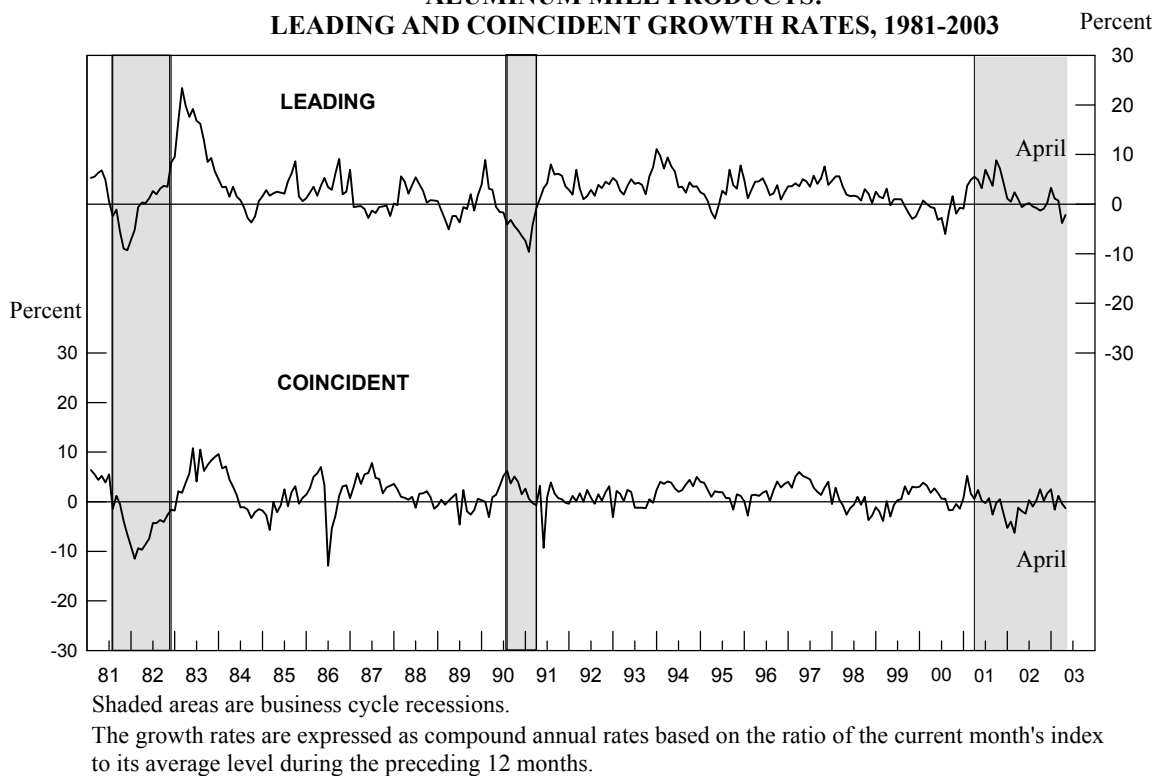


Table 8.
The Copper Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2002				
May	120.8r	6.3r	111.2r	-2.6r
June	120.0r	4.4r	110.7r	-2.9r
July	118.2r	0.9r	110.9r	-1.9r
August	117.3r	-0.7r	110.1r	-2.7r
September	116.5r	-2.2r	109.3r	-3.3r
October	116.1r	-3.1r	109.7r	-2.2r
November	116.2r	-3.2r	108.5r	-3.6r
December	117.3r	-1.6r	109.8r	-1.0r
2003				
January	117.2r	-1.8r	110.1r	-0.1r
February	115.9r	-3.6	109.7r	-0.6r
March	114.4r	-5.5r	108.7r	-2.4r
April	115.2	-3.6	108.2	-3.0

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 9.
The Contribution of Each Copper Index Component to the Percent Change in the Index from the Previous Month

Leading Index	March	April
1. Average weekly overtime hours, copper rolling, drawing, extruding, and alloying (NAICS 33142)	-0.5r	-0.2
2. New orders, nonferrous metal products, (NAICS 3313, 3314, & 335929) 1982\$	0.0r	-0.1
3. S&P stock price index, building products companies	0.0	0.6
4. LME spot price of primary copper	-0.4	0.1
5. Index of new private housing units authorized by permit	-0.4r	0.1
6. Spread between the U.S. 10-year Treasury Note and the federal funds rate	-0.1	0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-1.4r	0.6
Coincident Index		
1. Industrial production index, primary smelting and refining of copper (NAICS 331411)	-0.1r	-0.1
2. Total employee hours, copper rolling, drawing, extruding, and alloying (NAICS 33142)	-0.6r	-0.4
3. Copper refiners' shipments (short tons)	-0.4	NA
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	-1.0r	-0.4

Sources: Leading: 1, Bureau of Labor Statistics; 2, U.S. Census Bureau and U.S. Geological Survey; 3, Standard & Poor's; 4, London Metal Exchange; 5, U.S. Census Bureau and U.S. Geological Survey; 6, Federal Reserve Board and U.S. Geological Survey. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics; 3, American Bureau of Metal Statistics, Inc. and U.S. Geological Survey. All series are seasonally adjusted, except 3, 4, and 6 of the leading index.

r: Revised

CHART 8.
COPPER: LEADING AND COINCIDENT INDEXES, 1981-2003

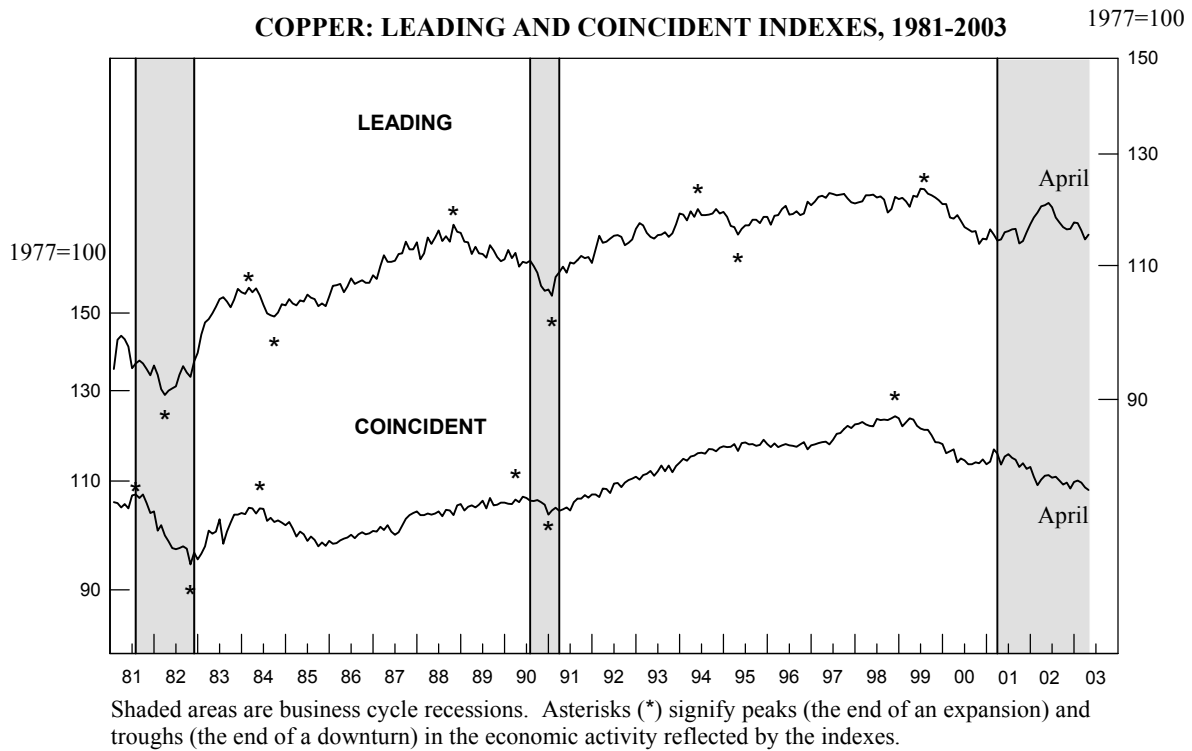


CHART 9.
COPPER: LEADING AND COINCIDENT GROWTH RATES, 1981-2003

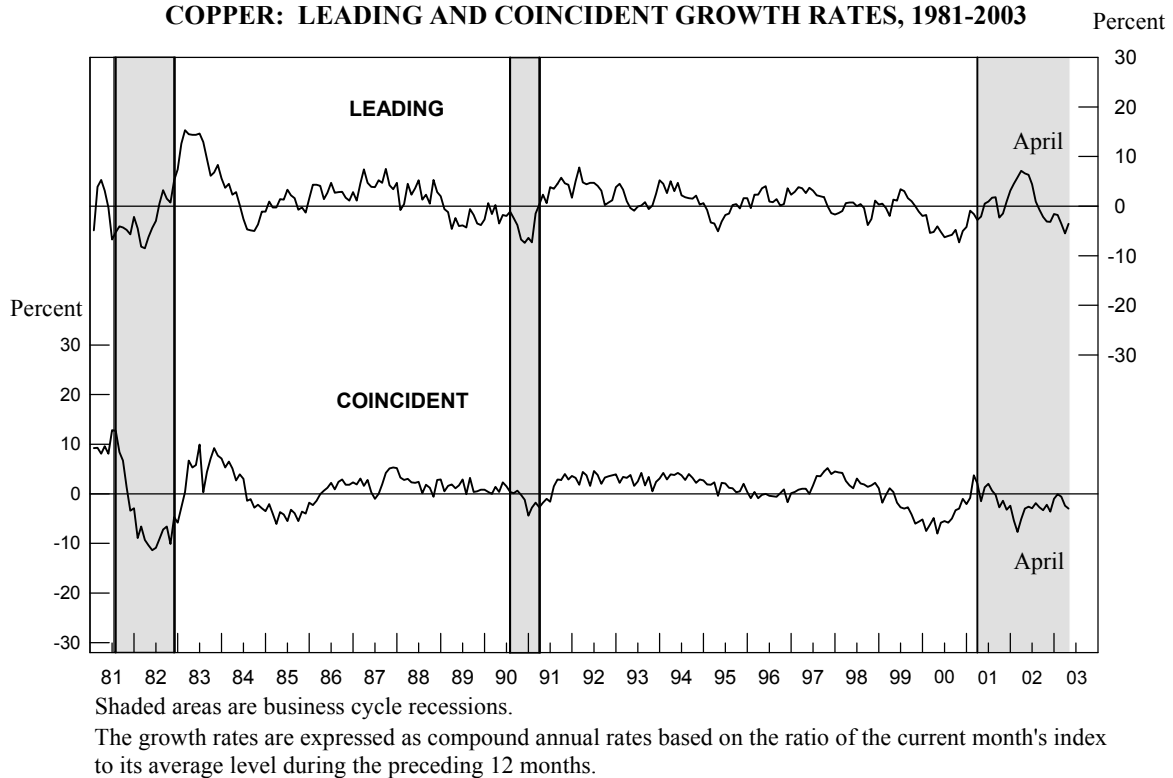


Table 10.
The Primary Aluminum Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2002				
May	75.8r	-10.1r	66.5r	-7.1r
June	75.6r	-8.8r	64.9r	-9.6r
July	78.6r	-0.5r	68.6r	2.4r
August	78.7r	0.9r	69.3r	5.2r
September	76.8r	-2.5r	69.0r	5.2r
October	75.1r	-5.6r	69.5r	7.4r
November	76.0r	-2.5r	69.8r	8.2r
December	77.4r	1.3r	70.5r	9.4r
2003				
January	77.9r	2.5r	70.0r	6.8r
February	78.8r	4.5r	70.7r	7.3r
March	79.0r	4.6r	70.0r	4.2r
April	78.9	4.2	68.8	0.2

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 11.
The Contribution of Each Primary Aluminum Index Component to the Percent Change in the Index from the Previous Month

Leading Index	March	April
1. Average weekly hours, primary aluminum products (NAICS 331312)	0.6	NA
2. S&P stock price index, aluminum companies	0.0	0.6
3. LME cash closing price for primary aluminum (\$/ton)	-0.2	-0.4
4. Industrial production index, misc. aluminum materials (NAICS 331315,9)	-0.4r	-0.1
5. New orders, nonferrous metal products (NAICS 3313, 3314, & 335929) 1982\$	0.0r	-0.1
6. Reciprocal, index of the trade-weighted average exchange value of the U.S. dollar against other major currencies	0.2	0.1
Trend adjustment	-0.1	-0.1
Percent change (except for rounding differences)	0.1	0.0
Coincident Index		
1. Production of primary aluminum (metric tons)	-0.8	-1.7
2. Total employee hours, primary aluminum products, (NAICS 331312)	-0.2	NA
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-1.0	-1.7

Sources: Leading: 1, Bureau of Labor Statistics; 2, Standard & Poor's; 3, London Metal Exchange; 4, Federal Reserve Board; 5, U.S. Census Bureau and U.S. Geological Survey; 6, Federal Reserve Board and U.S. Geological Survey. Coincident: 1, The Aluminum Association, Inc. and U.S. Geological Survey and 2, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted, except 2, 3, and 6 of the leading index.

NA: Not available r: Revised

CHART 10.

PRIMARY ALUMINUM LEADING AND COINCIDENT INDEXES, 1981-2003 1977=100

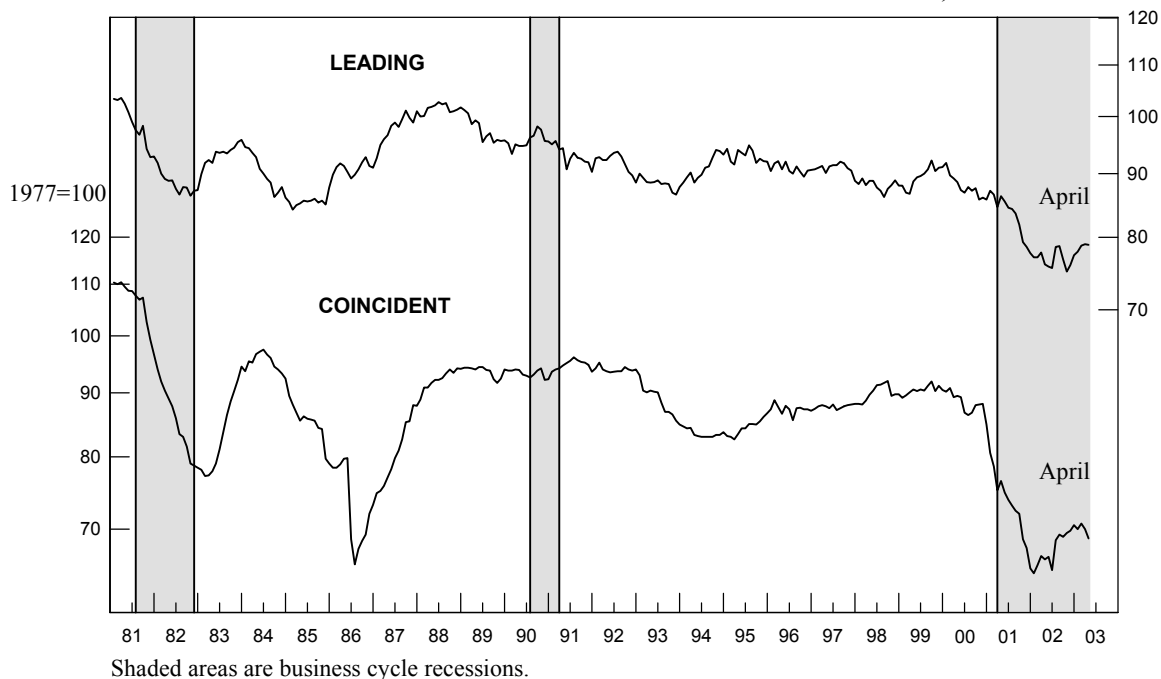
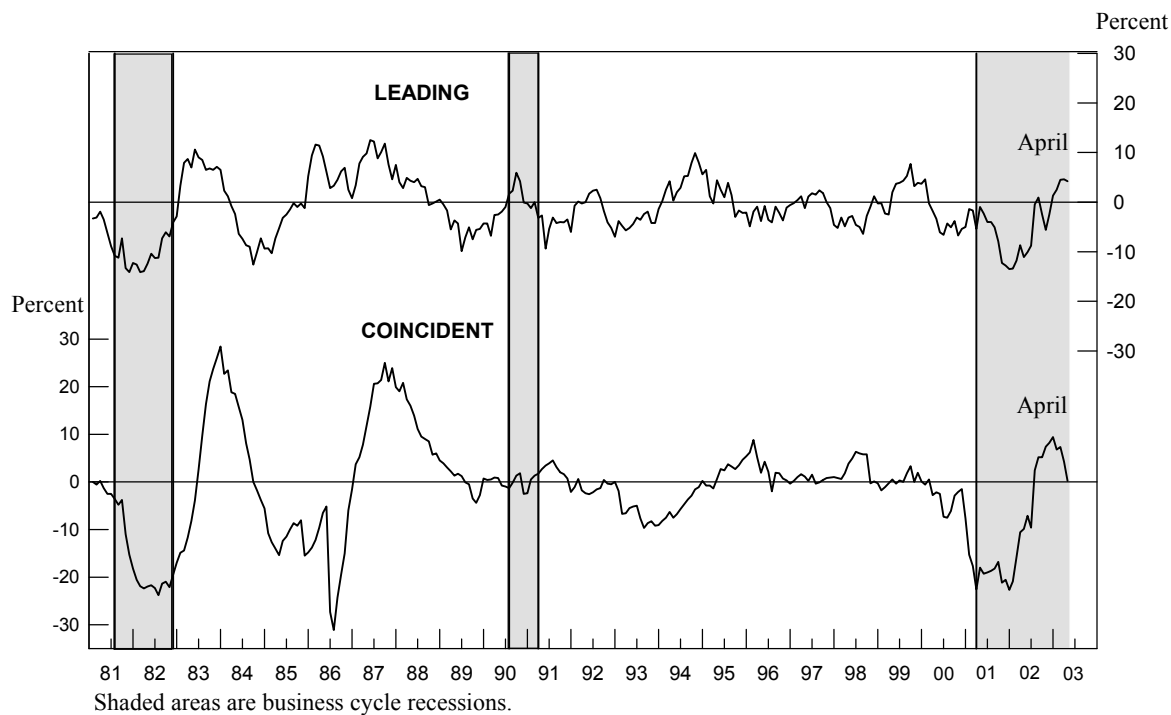


CHART 11.

PRIMARY ALUMINUM LEADING AND COINCIDENT GROWTH RATES, 1981-2003



The growth rates are expressed as compound annual rates based on the ratio of the current month's index to its average level during the preceding 12 months.

Explanation

Each month, the U.S. Geological Survey tracks the effects of the business cycle on five U.S. metal industries by calculating and publishing composite indexes of leading and coincident indicators. Wesley Mitchell and Arthur Burns originated the cyclical-indicators approach for the economy as a whole at the National Bureau of Economic Research in the mid-1930s. Over subsequent decades this approach was developed and refined, mostly at the National Bureau, under the leadership of Geoffrey H. Moore.¹

A business cycle can briefly be described as growth in the level of economic activity followed by a decline succeeded by further growth. These alternating periods of growth and decline do not occur at regular intervals. Composite indexes, however, can help determine when highs and lows in the cycle might occur. A composite index combines cyclical indicators of diverse economic activity into one index, giving decision makers and economists a single measure of how changes in the business cycle are affecting economic activity.

The indicators in the metal industry leading indexes historically give signals several months in advance of major changes in a coincident index, a measure of current metal industry activity. Indicators that make up the leading indexes are, for the most part, measures of anticipations or new commitments to various economic activities that can affect the metal industries in the months ahead.

Composite coincident indexes for the metal industries consist of indicators for production, shipments, and total employee hours worked. As such, the coincident indexes can be regarded as measures of the economic health of the metal industries.

The metal industry coincident indexes reflect industry activity classified by the U.S. Standard Industrial Classification (SIC) and the North American Industry Classification System (NAICS). Of the five metal industries, primary metals (NAICS 331) is the broadest, containing 25 different metal processing industries. Steel, aluminum, and copper are specific industries within the primary metals group.

The SIC was the main vehicle used by the U.S. Government and others in reporting industry economic statistics throughout most of the last century. Starting with the 1997 U.S. Economic Census, the U.S. Government began using the NAICS, which classifies economic data for industries in Canada, Mexico, and the United States. In general, metal industry indexes starting in 1997 begin to reflect the NAICS classification, while indexes for earlier years follow the SIC. Hence, composite indexes from 1997 forward are not entirely consistent with those of earlier years.

The largest change to primary metals because of the NAICS deals with other communication and energy wire manufacturing (NAICS 335929). Under NAICS, this manufacturing has been removed from primary metals and added to electrical equipment, appliance, and component manufacturing. Because monthly shipments and new orders for this wire are not available, the USGS is estimating their values from 1997 onward and adding them to the appropriate metal industry indicators and indexes to maintain consistency.

¹**Business Cycle Indicators, A monthly report from The Conference Board** (March 1996).

There are other small changes to the primary metals industry because of the switch to the NAICS. Coke oven activity not done by steel mills, for example, is removed and alumina refining, a part of industrial inorganic chemical manufacturing under the SIC, is added. Since the historic trends of the composite indexes are not affected by these small changes, the USGS is not making specific adjustments to the indexes for them for the periods before and after 1997.

The metal industry leading indexes turn before their respective coincident indexes an average of 8 months for primary metals and 7 months for steel and copper. The average lead time for the primary aluminum leading index is 6 to 8 months, and the average lead time for the aluminum mill products leading index is 6 months.

The leading index of metal prices, also published in the *Metal Industry Indicators*, is designed to signal changes in a composite index of prices for primary aluminum, copper, lead, and zinc traded on the London Metal Exchange. On average, this leading index indicates significant changes in price growth about 8 months in advance.

The growth rate used in the *Metal Industry Indicators* is a 6-month smoothed growth rate at a compound annual rate, calculated from a moving average. Moving averages smooth fluctuations in data over time so that trends can be observed. The 6-month smoothed growth rate is based upon the ratio of the latest monthly value to the preceding 12-month moving average.

$$\left[\left(\frac{\text{current value}}{\text{preceding 12-month moving average}} \right)^{\frac{12}{6.5}} - 1.0 \right] * 100$$

Because the interval between midpoints of the current month and the preceding 12 months is 6.5 months, the ratio is raised to the 12/6.5 power to derive a compound annual rate.

The growth rates measure the near-term industry trends. They, along with other information about the metal industries and the world economy, are the main tools used to determine the outlook of the industries. A 6-month smoothed growth rate above +1.0% usually means increasing growth; a rate below -1.0% usually means declining growth.

The next summary is scheduled for release on the World Wide Web at 10:00 a.m. EDT, Wednesday, July 23. The address for *Metal Industry Indicators* on the World Wide Web is: <http://minerals.usgs.gov/minerals/pubs/mii/>

The *Metal Industry Indicators* is produced at the U.S. Geological Survey by the Minerals Information Team. The report is prepared by Kenneth Beckman (703-648-4916; e-mail: kbeckman@usgs.gov), and Gail James (703-648-4915; e-mail: gjames@usgs.gov). The former Center for International Business Cycle Research, under the direction of Dr. Geoffrey H. Moore, and the former U.S. Bureau of Mines developed the metal industry leading and coincident indexes in the early 1990s. Customers can send mail concerning the *Metal Industry Indicators* to the following address:

U.S. Geological Survey
Minerals Information Team
988 National Center
Reston, Virginia 20192